

Real-time X-ray dosimeter for patient radiology

- Instant acquisition of delivered X-ray dose on patient
- Can be positioned anywhere on the patient

KEYWORDS

Dosimetry
X-ray
Optical fiber
Photodetection
Real-time acquisition

PATENTS

JP2014534434
Priority date

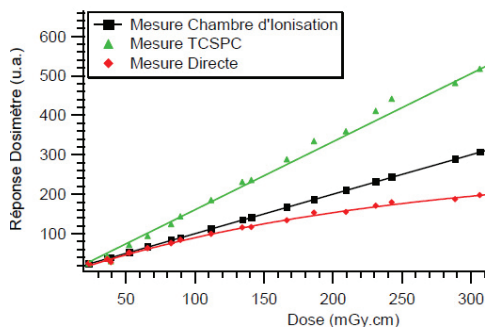
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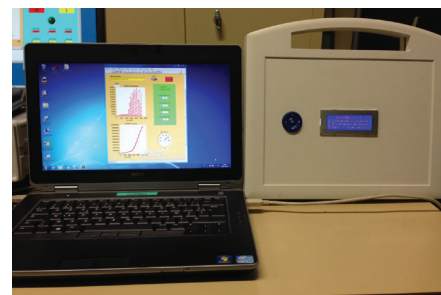


TECHNOLOGY

- Plastic scintillators transmitting the signal by optical fibres
- Signal treatment by TCSPC (Time Correlated Single-Photon Counting)
- Measure of a wide range of X-rays (10 keV to 300 MeV)
- Dose rate from 0.1 $\mu\text{Gy/s}$ up to $>2\text{mGy/s}$
- Can also measure charged particles & neutrons



Comparison of the response from the prototype (green) with a ionisation chamber (black) and a standard fluorescence method (red).



Miniaturised dosimeter + laptop

APPLICATIONS

- Real-time clinical radiology
- Acquisition of X-ray doses delivered by any source
- Can be integrated to the patient bed or clothes

INNOVATION ADVANTAGES

- Very small detector, invisible on radiology
- Great sensitivity and excellent linearity of the acquisition
- Dose measured directly on the patient
- Easy to handle and to transport
- Adaptability to the dose and to the X-ray generator

DEVELOPMENT STATUS

- Proof of concept demonstrated on the prototype
- Miniaturisation (kg-scale)
- Assays performed on phantoms and patients in hospitals

Technology available for an exclusive licence in Japan